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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 01092004

Application Number: 09/308,403
Filing Date: October 21, 1999
Appellant(s): FITCHETT, COLIN STANLEY

John P. Isacson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 24, 2003.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with. Appellant's grouping "A" contains claims 1-3, 7-16, 21-26, 28-39, 45-57 and

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59. However, grouping "A" is stated on pages 5 and 6 of the brief to be separable from grouping "B" because:

- grouping "A" recites a more specific gelling material,
- claim 36 of grouping "A" recites a dispersant which may be glucose or maltodextrin, and
- grouping "A" recites a self-gelling composition.

Appellant's argument does not demonstrate that the claims should be considered separately. The only claim reciting a self-gelling composition is claim 8. Despite this, appellant urges that all claims of group A should be considered separately. Appellant's argument regarding a separate grouping is clearly not commensurate in scope with the subject matter actually recited in the claims.

Similarly, claim 36 is the only claim requiring a glucose or maltodextrin dispersant. However, appellant urges that all claims of group "A" should be considered separately from the claims of group "B", based solely on a limitation which appears only in a single claim within group "A". Again, appellant's argument regarding a separate grouping is clearly not commensurate in scope with the subject matter actually recited in the claims.

Lastly, the fact that group "B" recites broader subject matter than group "A" is clearly not a proper basis for a

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separate grouping. Because the prior art is considered to obviate the narrower subject matter recited in group "A", the prior art would necessarily also render obvious the more generic subject matter recited in group "B". Thus, contrary to appellant's argument, the issues of patentability with respect to appellant's claim groupings "A" and "B" are the same. The claims should be considered to stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,530,112	GREENSHIELDS et al	6-1996
5,200,338	CRAWFORD et al	4-1993

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3, 7-26 and 28-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenshields et al (U.S. Pat. 5,530,112) in view of Crawford et al (U.S. Pat. 5,200,338).

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Greenshields discloses the peroxidase-catalyzed oxidative gelling of feruloylated arabinoxylans from various plant and cereal sources, and the use of said gels in all of the applications recited in the claims. See, e.g., Abstract; see also col. 5, lines 17-50. Greenshields differs from the claims in that Greenshields adds the peroxidase's substrate, peroxide, directly to the gelling composition, as opposed to generating the peroxide *in situ* by adding glucose oxidase and glucose, as recited in appellant's claims.

However, Crawford clearly discloses that a combination of glucose and glucose oxidase can be used effectively to generate *in situ* the peroxide required for peroxidase action on a polysaccharide substrate. See col. 6, lines 32-43. Thus, the artisan of ordinary skill at the time of appellant's invention clearly would have recognized that an effective method of generating the peroxide required for peroxidase action in Greenshields' process would have been the generation of the peroxide *in situ* by adding glucose and glucose oxidase to the gelling composition, as disclosed in Crawford. The artisan of ordinary skill, reasonably expecting that Crawford's *in situ* peroxide generation methods would have functioned in Greenshields' process, clearly would have been motivated to have substituted Crawford's methods for the direct addition of

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peroxide disclosed in Greenshields. Therefore, absent some unexpected result, the claims must be considered obvious under § 103(a).

(11) Response to Argument

All of appellant's argument regarding this ground of rejection has been fully considered but does not demonstrate error.

In summary, appellant's argument is that the artisan of ordinary skill practicing Greenshields' peroxidase-catalyzed polymerization process would not have looked to Crawford's peroxidase-catalyzed lignin degradation process for suitable peroxide sources. Because the process of Greenshields is polymerization and the process of Crawford is degradation, urges appellant, the artisan of ordinary skill would not have been motivated to have used Crawford's peroxide source in Greenshields' process. Moreover, urges appellant, because the reactions catalyzed by the peroxidases of Greenshields and Crawford are different, there would have been no reasonable expectation of successfully using Crawford's peroxide source in Greenshields' processes and compositions. Rather, urges appellant with support from a Rule 132 opinion declaration by Dr. Greenshields, the artisan of ordinary skill would have expected the glucose oxidase-catalyzed peroxide to have caused the

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reaction in the Greenshields patent to have degraded the polysaccharides rather than polymerized them. Thus, urges appellant, it is unexpected that the glucose oxidase-generated peroxide would have functioned in the Greenshields process.

With respect to the issue of motivation and the desirability of combining these references (Brief, items "B" and "C" at pages 7-10), it is well established that motivation may be derived from recognition in the art that the claims recite the use of a product known to be suitable for the claimed purpose. See, e.g., MPEP § 2144.07, entitled "Art Recognized Suitability for an Intended Purpose", and cases cited therein. In the instant case, the process of Greenshields requires a peroxide source. Crawford discloses that a suitable method of preparing peroxide is by adding glucose and glucose oxidase to the milieu, thereby generating peroxide *in situ*. Thus, Crawford clearly demonstrates that the claimed oxidase and its substrate are clearly suitable for preparing peroxide *in situ*, for use in peroxidase-catalyzed synthetic processes. The desirability urged by appellant as being absent is derived from the recognition in the art that this is a suitable way of generating peroxide.

The Rule 123 Declaration of Roderick Greenshields does not demonstrate an either lack of a reasonable expectation of success, or an unexpected result, as argued by appellant (Brief,

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items "D" and "E", pages 11-13). In essence, appellant's argument is that one of ordinary skill would have expected Crawford's *in situ* generation of peroxide to have reversed the peroxidase-catalyzed polymerization reaction disclosed in the Greenshields patent. However, neither the Declaration nor appellant's argument provides any evidence or reasoning, logical or scientific, which supports that conclusion. It is crucial to keep in mind that while the peroxidases of the Crawford and Greenshields patents have the common feature of using peroxide as a substrate, the enzymes in these two references are clearly different to the extent that Greenshields' enzyme, under the conditions disclosed therein, inherently catalyzes a polymerization reaction, whereas Crawford's enzyme, under the different conditions disclosed therein, inherently catalyzes a degradative reaction. Thus, contrary to appellant's argument, the artisan of ordinary skill would have reasonably expected peroxide generated *in situ* to have allowed Greenshields' peroxidase to function in its normal disclosed manner.

In this regard, appellant distinguishes between using glucose oxidase to generate peroxide, as opposed to directly adding peroxide to the reaction milieu, urging that the artisan of ordinary skill would not have recognized the equivalency of the two methods of providing peroxide to the reaction medium.

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Appellant supports this argument of lack of equivalency by the Declaration of Dr. Greenshields. If appellant's argument were correct, then the prior art would disclose a different result when peroxide were added directly to the reaction medium, as opposed to when peroxide was generated *in situ*. However, Crawford clearly demonstrates that the degradative peroxidase disclosed therein catalyzes its inherent reaction in the same way, regardless of whether the peroxide is added directly, or indirectly by adding a combination of glucose and glucose oxidase. See, e.g., sentence spanning columns 10 and 11. ("Reactions were carried out in a total volume of 3.0 ml, containing 0.1 mM hydrogen peroxide or a peroxide generating system consisting of 0.02 units/ml of glucose oxidase (Sigma) and 3 mM glucose")

Thus, Crawford clearly undermines appellant's argument. Crawford clearly considers direct addition of peroxide to be equivalent to oxidase-catalyzed peroxide generation *in situ*. Directly contrary to appellant's argument, Crawford does not suggest that the peroxidase reaction will be different when peroxide is added directly, as opposed to when peroxide is generated by an oxidase *in situ*. Significantly, other than the Declaration of Dr. Greenshields, appellant fails to provide any objective evidence supporting the assertion that a peroxidase

will behave differently when peroxide is added directly to the reaction medium, as opposed to when peroxide is generated *in situ*. In short, Crawford demonstrates that appellant is incorrect in asserting that direct addition of peroxide would not have been considered equivalent to using an oxidase to generating peroxide *in situ*. In fact, based on Crawford's disclosure, the artisan of ordinary skill would have reasonably expected oxidase-catalyzed *in situ* generation of peroxide to have functioned at least equivalently direct addition of peroxide.

It is noted that claim 36 requires a dispersant "selected from the group consisting of glucose and maltodextrin" (Brief, item "F", page 13). However, as discussed above, Crawford clearly provides motivation for adding glucose along with the glucose oxidase, so as to generate *in situ* the peroxide required for the peroxidase reaction. Thus, contrary to appellant's argument, Crawford clearly provides motivation for adding the claimed dispersant to the claimed composition.

It is also noted, as argued by appellant (Brief, item "G", pages 14 and 15), that Crawford discloses the *in situ* generation of peroxide for use in a degradative process employing a peroxidase, whereas Greenshields' process is directed to a gelling process employing a peroxidase. However, the critical feature common to both processes is that each process employs a

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peroxidase to generate a final product, and peroxidases require a peroxide substrate. The artisan of ordinary skill, recognizing the need for an effective method of generating the peroxide required for peroxidase action in Greenshields' process, would have reasonably expected that Crawford's method of *in situ* peroxide generation, by adding glucose and glucose oxidase to the gelling composition, would have been suitable for use in Greenshields' process.

Thus, it is respectfully submitted that, contrary to appellant's argument, the Crawford reference does not "teach away" from using an oxidase to generate peroxide *in situ* for use in the peroxidase-catalyzed synthetic reactions of Greenshields. It must be kept in mind that the holding of obviousness herein is not based on the substitution of Crawford's degradative peroxidase for Greenshields' polymerizing peroxidase. While one of ordinary skill would have expected Crawford's degradative peroxidase to have caused degradation instead of the polymerization catalyzed by Greenshields, the holding of obviousness is simply not based on these grounds. Rather, appellant's claims merely recite compositions and processes whereby the substrate for Greenshields' polymerizing enzyme is generated *in situ* by the action of an oxidase. The notoriously well known process of using oxidases to generate peroxide in

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situ for peroxidase reactions cannot be considered a patentable improvement.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Francisco C Prats
Primary Examiner
Art Unit 1651

FCP

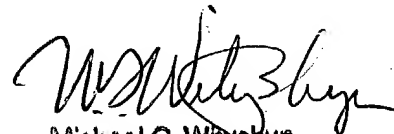
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